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## **RECONSIDERATION OF SUPPORTING SCHEME FOR RENEWABLE ENERGY PRODUCERS**

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Striving to prevent climate changes, global community has established favourable national feed-in support schemes for the renewable electricity. Renewable energy is promoted through these schemes in the whole world and, particularly, in European countries. Frequently, the support is provided by a guaranteed purchase price, which is significantly higher than the market price of electricity.

In Latvia, an Electricity Market Law prescribes that an electricity producer, which operates renewable energy sources, specifically in co-generation mode, may acquire the right to sell all the produced electricity within the framework of the mandatory procurement at a guaranteed purchase price. As a result all the energy, which is produced from renewable energy sources, is sold to the public trader at a guaranteed purchase price, but the public trader sells and buys energy at the market prices, which vary significantly over the time. All electricity consumers pay the difference. The main drawback of the described support scheme is related to the absence of the coordination of power plant (PP) operation with the electricity market price or indirectly, electricity demand.

This paper demonstrate that cooperation of the public trader (PT) and PP operator in the market conditions could minimize additional cost of the support for the consumers and/or provide an additional income to PT and the PP owner. For this purpose, the coalition between PT and PP will be formed (creation of such coalition does not contradict the norms of law). Then, using scenario approach, planning problem of the day-ahead PP operation will be formulated as maximization of the expected total profit over the day taking into account profits of both PT and PP. The production planning can be made using the game theory and Bayes-Laplace criteria. Co-operative game theory and the Shapley value can be applied for the fair additional profit allocation. We demonstrate the advantages of the collaboration by the case study of a small hydro PP, the PT and the co-generation PP. The modification of the schedule of the co-generation power plant to adjust to the electricity market prices and, thus, the electricity demand creates an additional income for the PT.

It is concluded that the support principles of PP have to be reviewed. Proposed stochastic approach, formulation of the objective function and Shapley allocation for the additional revenues can increase the effectiveness of the operation of any kind of PP, provided that the daily power production is controllable, but water or fuel resources are constrained.

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